

Zero-subtracted Waveforms

Local application

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For the xxx project at A0, there are 1 MHz waveforms found in Quick digitizer memory whose signals are sampled at 2 MHz, so that every other point can represent zero data, and the rest represent the actual data. Since the zero data pedestals can vary during a succession of 1 MHz beam pulses, one can apply the most recent zero data measured just before each beam pulse. This note describes a new local application called ZWAV to do the required logic.

The parameters of interest are as follows:

ENABLE	B	Enable Bit#
EVENT#		Clock event# when another waveform has been captured.
WAVEFRM	C	First channel# providing waveform address
NCHANS		#channels
RESULT	C	Result channel# providing result waveform address
NPOINTS		#data points written to result array by zero-data subtractions

Upon initialization, capture the analog control fields, which are used to house waveform array base addresses. These are used whenever the selected event occurs to know what data is to be processed and where to target the result zero-subtracted waveforms. *Important:* In order to effect a change in any of the parameters, restart the local application.

When the selected event# is true, process the indicated waveforms with the first word in each waveform assumed to be zero data, then subtract that value from the value in the next word, which is considered real data, and store the difference at the result waveform address.

There is nothing in the logic that requires a Quick digitizer to be used. A Swift or Quicker digitizer could be used just as well. Note that producing NPOINTS of data requires processing of 2*NPOINTS of waveform data. In each case, the zero-data precedes the real data point.